

# EEGI meeting N°7

“Portfolio of possible financing schemes for  
RD&D including large scale demonstrations”

S.Galant, T. Pagano, E. Peirano, A.Vaféas

EEGI meeting, Brussels, May 8 th 2012

# Outline

- **The scope and objective of the draft report**
- **Issues to be addressed**
- **Report status as of May 1-st 2012**
- **Early conclusions**

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# Report scope and objectives



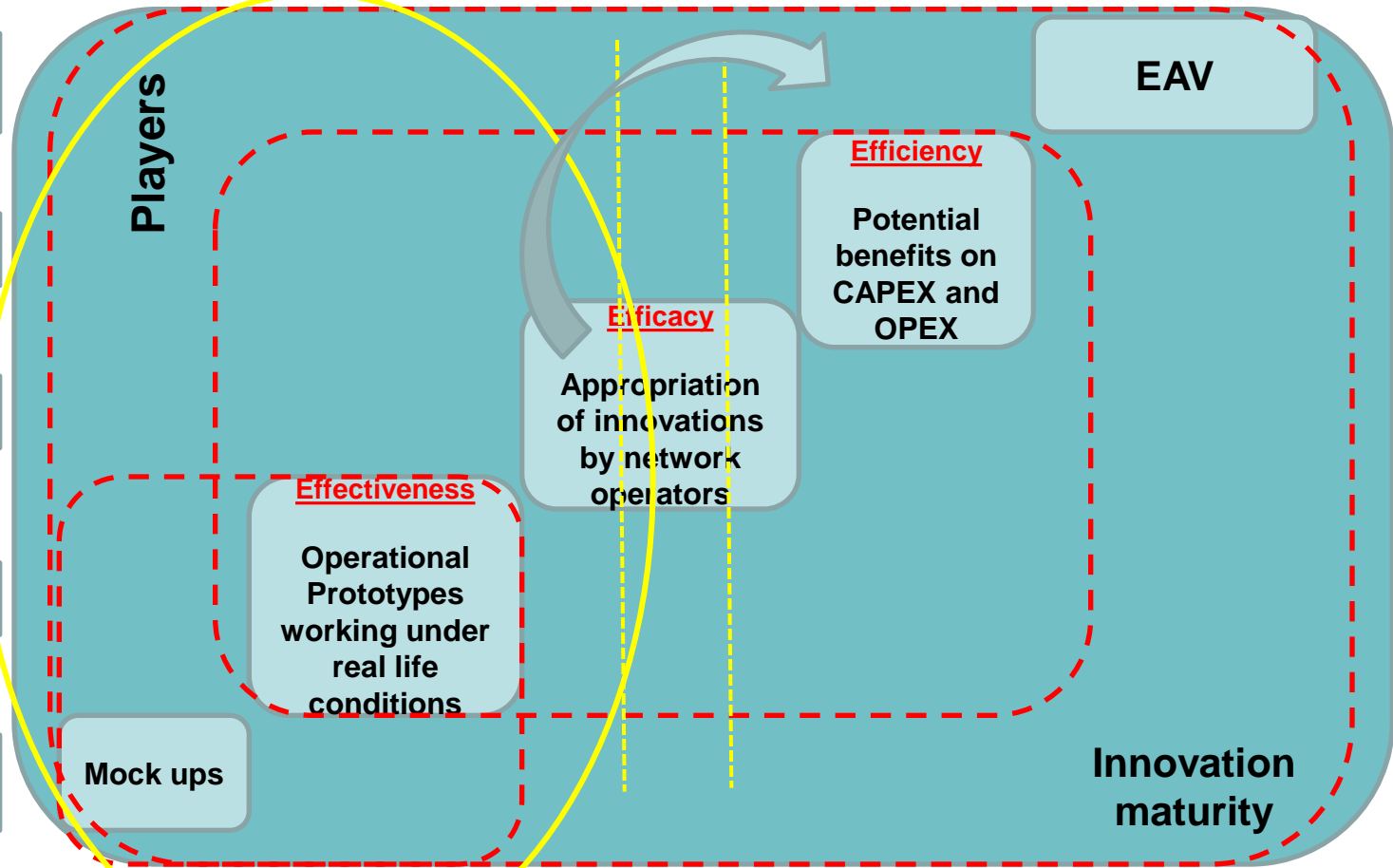
Generators  
retailers  
customers

TSO/DSO

Field  
operators

Manufacturers

Universities  
Research  
centers



Research

Development and demonstration

Industrialisation

National deployment

European impacts

- Analyze financial schemes adopted at international level
- Analyze possible financing gaps
- Create a portfolio of possible financial schemes,
- Validation by EDSO4SG and ENTSO-E (dedicated work in progress for TSO's at ENTSO-E level)
- Presentation of the first report by September 2012
- Input to HORIZON 2020

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# Issues to be addressed

- Why are large scale demonstrations needed to deploy smart grids ?
- What is new in the mix of private and public funding ?
- Are portfolios of financing schemes able to bridge the funding gaps by mixing private, public ( MS, EC) and tariff funds?
- Why smart grid development/deployment will remain slow?

- Why large scale demonstrations before deploying smart grids ?
- What is new in the mix of private and public funding ?
- Is the portfolio of financing schemes able to bridge the financing gaps ?
- Why will smart grid deployment remain slow?
- Validate scaling and replication rules for system innovation
- Larger benefits for free market players: grid players take grid deployment risks
- Room for financing innovation and further regulatory involvement
- Fast, cheap, reliable



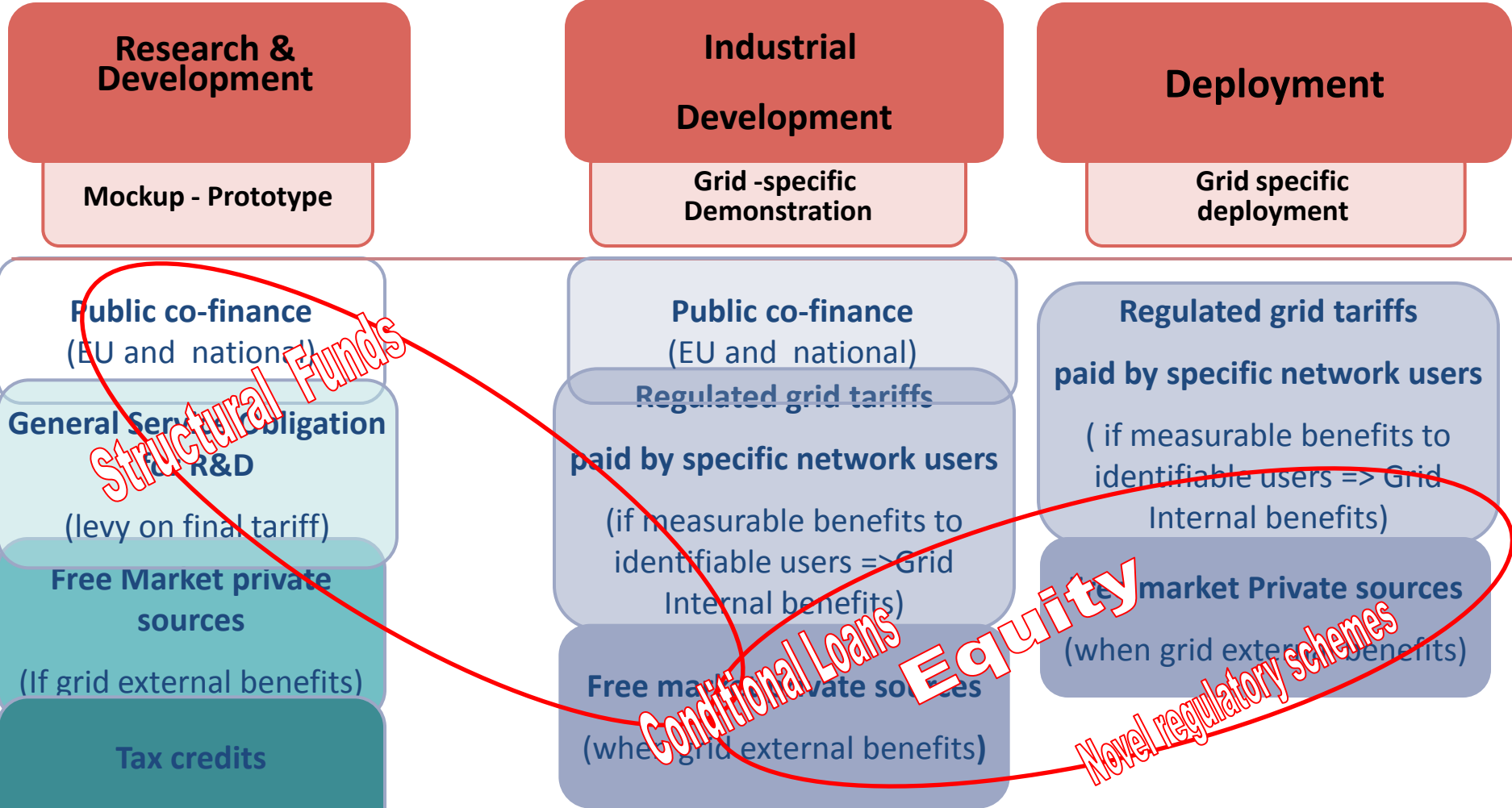
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- Scaling up: the economic risk of deployment is not under control, even though the technical risk appears mastered (lack of economic scaling)
- Replication: the regulatory environment, favorable in one control zone (economic scaling is then managed) is no longer favorable in another control zone (lack of replication potential)



# Existing funding schemes



*Structural Funds*

*Conditional Loans*

*Equity*

*Novel regulatory schemes*

### 3 classes of MS so far



#### Relying on current approaches (Ex)

##### Austria

- Incentive regulation (with focused parameters) providing inherent incentives to reduce costs and deploy innovative solutions
- Complemented by **other sources of funding for demonstration phase**

##### Sweden

- **Separate public funding** scheme for demonstration projects, whose funding decisions are not made by NRA



#### Evolving Frameworks (Ex)

##### Finland

- Innovation Incentive : pass-through of % of R&D costs to customers (2012 – 2015 regulatory regime)

##### Lithuania

- Lithuanian Special company created to encourage innovative solutions

##### Netherlands

- Developments expected in Netherlands

##### Belgium

##### France

- Conditional loans

[www.gridplus.eu](http://www.gridplus.eu)  
EEGI meeting May 8-th 2012



#### New Tailored Incentive Mechanisms

##### UK

- Allowance to recover RD&D expenditures via regulated tariffs for DNOs : IFI (R&D)+RPZ (Demo) + LCNF
- RIIO (Output based regulation) for DNO and TSOs: 1) **“second deliverable instrument”** and 2) **“Innovation Stimulus Package”** based on LCNF (extended to TSO)

##### Italy

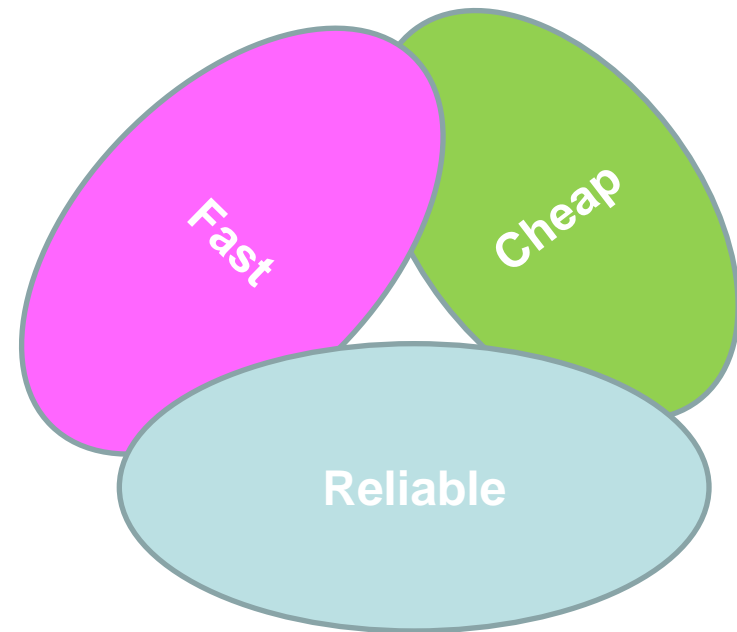
- **Tariff incentive** : Extra-WACC of + 2% for CAPEX of selected demonstration projects for 12 years
- **General levy for R&D** in network tariff (0.03 c€/kWh)

##### Portugal

- **New options incentivising innovation investments** in distribution in new regulatory period ( 2012-2014) : 150 bp premium added to RoR, considering weight of innovative investments in RAB

# Speed of smart grid development/deployment

- Smart grids reproduce the trilemma\* of product development:
  - fast, cheap, good : **only two of the three possible**
  - fast, cheap, reliable : **only two of the three possible**
- Regulators/network operators will choose cheap and reliable, not fast!
- Accelerating means parallel RD&D projects as early as possible (priorities)



\*

See for instance [Robert Mundell](#) and [Marcus Fleming](#)

papers



TECHNOFI

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# Early conclusions

- EC funding via Horizon 2020 critical to support EC 2050 orientations: reliable and cheap innovative solutions will be slow to develop/deploy.... requiring more parallel RD&D projects
- Involvement of Structural Funds to cover part of the large scale demonstration risks in Member States
- Innovative tariff funding emerges thanks to the Third Energy Package use: more room for funding sources
- Funding mix adjusted to the risk/benefit profile of each EEGI roadmap functional objective: no one size fits all !
- Scaling up and replication activities needed to reduce deployment risks over EU27 and minimize deployment costs

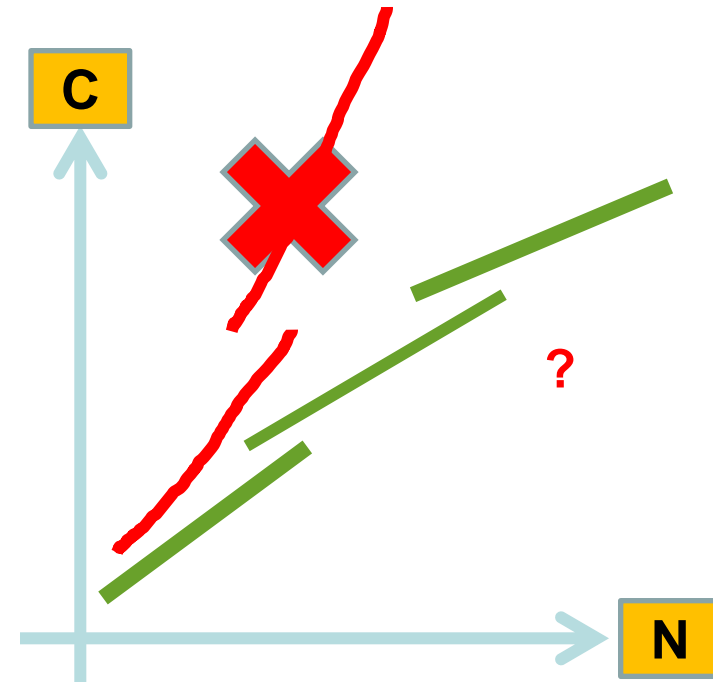
# Back up slides



CAPEX + OPEX **C**

Number of pilot grid users **N**

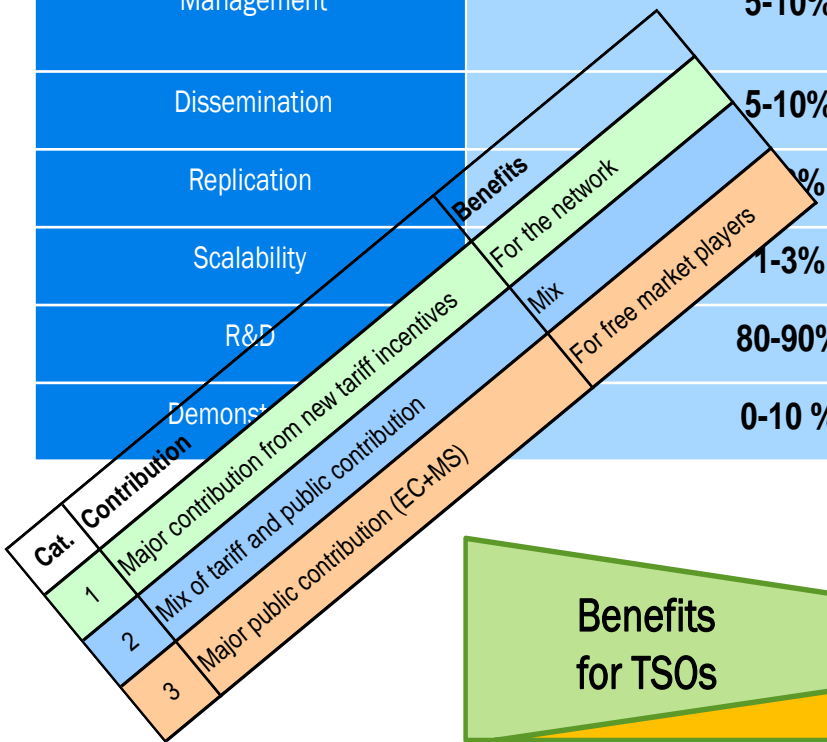
- Transmission & distribution: only full scale validation is trusted, even though simulations can reduce experimental costs
- Large scale demonstrations are needed for scaling up (MS) and replication (EU27) studies



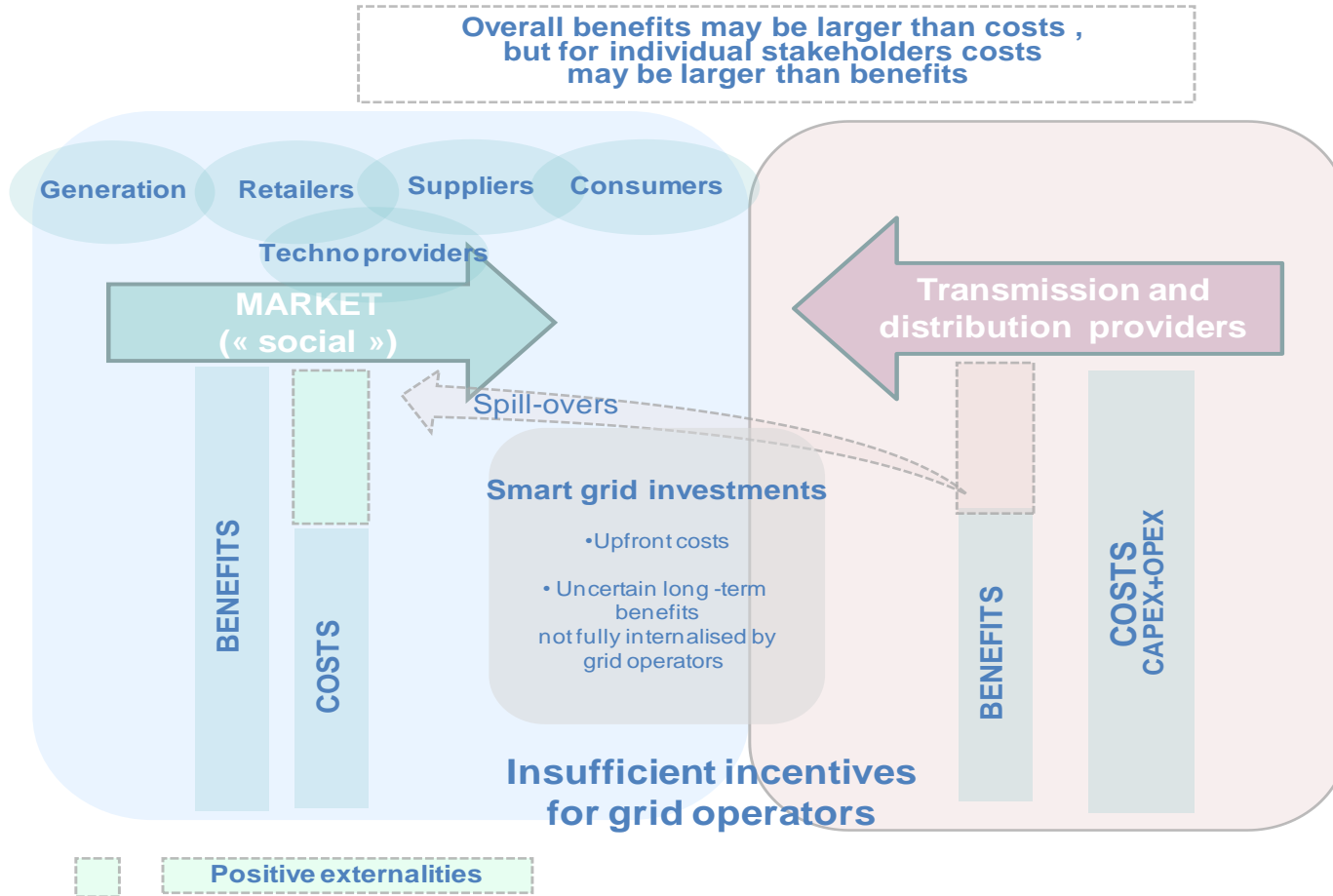
# Benefits and stakeholders

Activities	Functional projects														
	1	2	14	6	7	8	9	10	11	12	13	3	4	5	
Management				5-10%								4-6 %		4-6 %	
Dissemination				5-10%								3-5 %		3-5 %	
Replication				1-3%								3-5%		3-5%	
Scalability				1-3%								7-9%		7-9%	
R&D				80-90%								5-60 %		20-25 %	
Demonstration				0-10 %								30-35%		55-60 %	

**ILLUSTRATIVE**



# Risks and benefits



# Regulatory incentives for network innovation



## - Direct pass-through of RD&D Costs to customers

- *IFI (UK)*: pass through of a significant part of R&D costs to customers in network charges (with Cap @0,5% of turnover)
- LCN F - First Tier : regulatory allowance to recover demonstration expenditures via tariffs
- Premium added to RoR for investments in RAB (Portugal)
- Innovation Incentive (Finland)

- *Temporary enhanced RoR for demo projects CAPEX* (« extra-WACC tariff incentive » ) based on competitive process (Italy)

- **LCN Second Tier (2010-2015)**: Central Fund (competitive process) allowing up to £500m support to DNOs demo projects (UK) + Discretionary rewards for successful project completion and exceptional projects
- **UK RIIO (from 2013) -Network Innovation Competition (NIC)**: Partial funding through competitive process for innovation projects (at any point in innovation cycle) , for TSO and DSO (as from 2015 for DSO once LCN F is over).

- *RIIO Innovation Allowance* : similar to IFI but will fund outputs defined in innovation strategy as part of company's business plans

## - Revenue Allowances

- **RPZ** : tariff space for demo projects ("additional revenue allowance" based on output criteria)
- **RIIO secondary deliverable instrument (UK)**: Possibility to include expenditures for technical and commercial innovation projects in business plans and raise revenues from customers when « project milestones are reached »
- **Long regulatory periods** : RIIO (extension of regulatory period to 8 years)
- Uncapped (?) premium and penalties on quality of supply ( Italy)

Input based mechanisms

Output based mechanisms

Contest-based mechanisms

Levy on consumers' bills

- **General R&D component in network tariffs** (Italy, France, Denmark)
- In Italy , the money is collected by DSOs for other R&D organizations (RSE, ENEA, CNER)

# Overview of RD&D financing instruments

## ECONOMIC REGULATORY FINANCING INSTRUMENTS (TARIFFS)

Network charges  
(paid by specific network users)

Levy on consumer bills  
(paid by all final consumers)

### Incentive based regulation

Input based mechanisms

Direct pass-through of RD&D Costs to customers

RD&D costs Capitalisation

Output based mechanisms

Revenue Allowances  
(Raising the cap)

Extension of regulatory periods

Regulatory holidays

Contest –based mechanisms

Funding awarded based on competitive process and raised from “use of system charges” recouped from consumers

General R&D component in  
(Public Service Obligations tariff)

## FINANCING INSTRUMENTS OUTSIDE ECONOMIC REGULATION

### PUBLIC FUNDING

(EU , National regional funding bodies)

Grants

Tax credits

Loans and Loans Guarantees , Reimbursable loans

Third Party Financing

### PRIVATE FUNDING

Corporate financing from regulated operators  
(DSO/TSO)

Corporate financing from deregulated actors  
(manufacturers, retailers, suppliers)

Venture Capital

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